

REMARKS

Claim status

Claims 1-6, 8-24, and 26-29 were pending in the application at the time of the current Office Action. Claim 29 is cancelled herein. New claims 30 and 31 are added herein. No new matter has been added. Claims 1-6, 8-24, 26-28, and 30-31 are currently pending in the patent application. There are a total of 28 claims currently pending in the application.

Specification

The specification has been amended herein simply to correct the two-digit paragraph numbering to make them four-digit paragraph numbering, and to insert the now known serial number of a patent application that was incorporated by reference in the original patent application.

Allowable Subject Matter

Claims 9 and 19 are objected to as being dependent upon a rejected base claim. Applicants thankfully and respectfully acknowledge the Examiner's statement that claims 9 and 19 would be allowable if rewritten in independent form with the limitation of the cylindrical shaped ground reference and including all of the limitations of the base claim and any intervening claims.

In this regard, base independent claims 1 and 13 have been re-written herein as new independent claims 30 and 31 which have been added herein to include the cylindrically-shaped ground reference limitation of claims 9 and 19. Therefore, it is respectfully submitted that new claims 30 and 31 are in prima facie condition for allowance, in accordance with the Examiner's statement of allowable subject matter for claims 9 and 19 and any intervening claims in the current Office action.

Section 103 rejections

In the current Office action, claims 1, 8, 10, 11, 13, 18, 20, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moilanen (5,561,439), hereinafter Moilanen, in view of Buckles (6,486,849), hereinafter Buckles.

In the current Office action, claims 2, 4, 6, 14, 16, 21, 23 and 24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moilanen in view of Buckles as applied to claims 1 and 13 above, and further in view of Pla (6,300,912), hereinafter Pla..

In the current Office action, claims 5, 17 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Moilanen in view of Buckles as applied to claims 1 and 13 above, and further in view of Press (1,554,231), hereinafter Press.

With respect to independent claims 1 and 13, there is no motivation given for modifying the antenna of Moilanen by replacing the single vertical element 1 of Moilanen with the plurality of elements 52A-52N of Buckles. In Moilanen, the purpose of the cone-shaped ground plate 2 is to adjust a resonant frequency and impedance of the antenna configuration by moving the cone-shaped ground plate 2 up and down along the single vertical element 1. In the claimed invention of claims 1 and 13, such an adjustment of resonant frequency and impedance cannot be readily effected as in Moilanen since the outwardly disposed radiative elements of the claimed invention of claims 1 and 13 would tend to not allow such a cone-shaped ground plate to be moved up and down vertically. That is, the radiative elements of the claimed invention of claims 1 and 13, being at acute angles, would tend to prevent such a vertical movement of a cone-shaped ground plate along the multiple radiative elements. Therefore, applying the multiple radiative elements of Buckles to the antenna of Moilanen would tend to defeat the adjustable purpose of the Moilanen antenna. Therefore, not only is there no motivation given in Moilanen or Buckles to replace the single radiating element of Moilanen with the multiple radiating elements of Buckles, there is clear motivation in Moilanen for not doing so.

Similarly, applying the cone-shaped ground plate of Moilanen to the antenna configuration of Buckles by replacing the horizontal flat ground plate 60 of Buckles with the

cone-shaped ground plate 2 of Moilanen would tend to defeat the purpose of the Buckles antenna. Buckles describes the metal horizontal flat ground plane 60 as acting as a mirror for the antenna, and that the larger the extent of the flat ground plane the better is this “mirror” performance (i.e., acting to reflect RF energy upwards above the horizon). It is clear from the present application that the omni-directional and multi-polarization capabilities do not get better with such a flat ground plate. Instead, the omni-directional (e.g., above and below the horizon capability) and the multi-polarization capability can improve as we move away from a planar ground reference toward a non-planar ground reference as described in the present application. Buckles does not teach or suggest improving multi-polarization performance and, in fact, does not discuss multi-polarization concepts at all. Also, Buckles does not teach or suggest expanding performance below the horizon. Instead, Buckles suggests making the flat ground plane as large as possible (see column 1, lines 61-65). Such an enlargement of the ground plane would tend to degrade below the horizon performance and limit multi-polarization possibilities which are some of the key objectives of the claimed invention of claims 1 and 13. Applicants can see no clear motivation given in Buckles or Moilanen for modifying the antenna of Buckles with the cone-shaped ground plate of Moilanen to come up with the claimed invention of claims 1 and 13. In fact, any motivations given in Buckles and Moilanen seem to suggest not doing so, as the performance and capabilities that Buckles and Moilanen are concerned with improving would tend to be degraded by such a modification as described above.

In summary, combining the plurality of radiative elements of Buckles with the cone-shaped ground plate of Moilanen can result in improved omni-directional and multi-polarization performance characteristics that are not being pursued by either Buckles or Moilanen. The performance capabilities that are being pursued by Buckles and/or Moilanen would be degraded by such a combined configuration. Neither Buckles nor Moilanen teach or suggest improving multi-polarization performance and/or omni-directional performance (e.g., below the horizon performance) as does the configuration of the claimed invention of claims 1 and 13 of the present application.

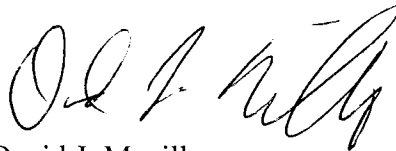
Therefore, in view of at least the foregoing, it is respectfully submitted that the claimed invention of claims 1 and 13 are not unpatentable over Moilanen in view of Buckles, or vice

versa, and that claims 1 and 13 define allowable subject matter. Further, since claims 2-6, 8-12, 14-24, and 26-28 depend either directly or indirectly from claims 1 or 13, it is respectfully submitted that these dependent claims are also in prima facie condition for allowance as well, irrespective of the Pla and Press references.

Applicants respectfully request that the rejections of claims 1-6, 8, 10, 11, 13-18, 20-24, and 26-28 under 35 U.S.C. 103(a) be withdrawn.

Accordingly, the applicant respectfully requests favorable action with respect to claims 1-6, 8-24, 25-28, and 30-31 which are believed to be in prima facie condition for allowance and clearly distinguish over the prior art.

Respectfully submitted,



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